



SUDDEN DEATH SYNDROME RESISTANCE

is Crucial to Producers, but a Challenge for Researchers



by Kelly Mescher

A new planting season will soon be upon us. And although new varieties are introduced every year, there is still no good form of resistance to sudden death syndrome (SDS).

This is a major problem, since SDS is currently costing soybeans producers in Iowa and Illinois \$80 to over \$100 million a year in lost yield.

Researchers across the Midwest are conducting field trials to find resistance to SDS. “Finding resistance to SDS has been a challenge though,” says XB Yang, associate professor of plant pathology at Iowa State University (ISU). “Field research gives us hit and miss results.”

It is difficult to get consistent results because of the strong influence that abiotic and biotic factors such as soil moisture, soil compaction, and the soybean cyst nematode (SCN) have on the severity of SDS.

Finding a good source of resistance to SDS is crucial to soybean producers, says David Lightfoot, professor of plant soil and general agriculture at Southern Illinois University (SIU).

“The alarming thing to me is that SDS has been doubling every five years, and now it’s all over the place,” says Lightfoot. “We never heard of it in the ‘80s. But now the potential losses are huge. If it keeps doubling every five years like it has in the past, SDS will surpass the soybean cyst nematode for yield loss by 2015.

“We need to up the ante on the seriousness we have for SDS research, and we need to find some resistance,” Lightfoot continues. “Looking to South America gives us some perspective as to how bad it could get here in the U.S. The SDS problem is twice as bad in South America because they have many different types of SDS.”

The conditions there should motivate us even more to find disease resistance.

A Valuable Investment of Checkoff Dollars

The North Central Soybean Research Program (NCSRP), an organization

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Researchers have concluded that variety selection is the best method to combat this disease.



NCSRP 
NORTH CENTRAL SOYBEAN RESEARCH PROGRAM

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formed by 12 state checkoff boards, began funding SDS collaborative research in March 1995. The United Soybean Board also began contributing checkoff dollars in 2001. The research is led by investigators at Southern Illinois University (SIU) at Carbondale with collaborators from the following institutions: University of Illinois at Urbana-Champaign, Iowa State University, University of Arkansas at Fayetteville, University of Missouri at Columbia, University of Tennessee, University of Kentucky and Purdue University.

The objectives of the project are:

1.) *Provide leadership in coordinating SDS research underway in various locations through collaborative research verification activities.*

2.) *Provide regular information interchange venues, which will maximize the research impact from the funds available for SDS research.*

3.) *Establish a cooperative soybean variety testing program designed to identify those varieties that possess a high level of resistance to SDS.*

Greenhouse Plays an Important Role

“In order to eliminate the overriding effects of environmental variables, research is being taken to the greenhouse,” ISU’s Yang says. “In the greenhouse, you can manipulate the environment to obtain more consistent results. The greenhouse is also better in terms of speediness, and you can test a large number of varieties.”

“Testing large numbers of varieties in the greenhouse is very important to seed companies,” says Dr. David Wright, coordinator of NCSRP’s Plant Health Initiative. “Disease screening methods must be fast and accurate. Seed companies may need to screen five-thousand to ten-thousand lines/entries a year for multiple diseases.”

More importantly though, to the producer, is obtaining consistent results. “There is nothing more frustrating to a soybean producer than to have a soybean variety show more susceptibility to a disease than what the company said it should,” continues Wright. When a soybean producer is unhappy with the performance of a variety they generally

don’t plant it again. It is also not uncommon for producers to change seed suppliers in an attempt to find more consistent performing products.

“Losing a customer is the last thing any seed supplier wants,” Wright says. “That is why seed companies are spending large amounts of money on developing new disease screening methods.”

Greenhouse testing is helpful, but field-testing will always be very important. In the greenhouse it is difficult to duplicate the effect interactive stresses like SCN and SDS have on soybean growth. Research has proven that SDS can be more severe in fields infested with SCN. There is also some evidence that shows SCN carries the SDS pathogen and can help the fungus gain access into the plant roots. “The disease screening methods being developed today aren’t perfect,” says Wright. “But they are better than what has been used in the past.”

Producers Can Take Action

There are steps producers can take today to find yield stability in the next growing season. “I would recommend going to the Plant Health Initiative Web site (www.planthealth.info), where many links are available with variety trial results,” says Jason Bond, assistant professor of plant pathology at Southern Illinois University. “They can also contact their seed dealer. They are having more success in getting information on SDS, and are getting better at helping producers pick varieties with some resistance to SDS.”

“Hold off on planting,” Yang says. “The more time the soil has to dry out and warm up, the better. Even one week can make a big difference in planting to reduce the risks for SDS.”

Bond agrees. “When you plant into June, you escape most SDS. It’s going to be very minimal. There’s definitely a temperature and a moisture factor that correlates with early planting and SDS.”

Lastly, “keep investing in the checkoff,” Lightfoot says. “The checkoff funded research is the only fundamental research taking place in the U.S. today. We really need some fundamental answers to this problem.”

